New light on iron deficiency in young children

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(Medical Xpress) -- Research from The University of Auckland and Starship Children's Hospital has given a new understanding of the risk factors for iron deficiency in young children. This knowledge will allow children at risk to be identified more easily and will help in preventing this serious condition.

The study, published this month in *Nutrition and Dietetics*, focused on the interactions between a number of known risk factors in a random community-based sample of children between six and 23 months of age, of whom 13 percent had iron deficiency. It showed that certain combinations of risk factors could place children at a much higher risk of iron deficiency than when they occurred singly.

"The individual risk factors in the study have long been known, but knowledge of the context gives us a broader and much more clinically useful picture," says Associate Professor Cameron Grant from the Department of Paediatrics at the University. "It has allowed us to demonstrate how much one factor can intensify the effects of another. For example, the research findings now enable me to say: 'Here is a young child who has cows' milk daily and only has fruit as a snack (rather than with the main meal) : the combination of these two factors increases the risk of iron deficiency 11 fold. Therefore we know we need to do something about it.'"

Iron deficiency is common among young children, with estimates from Australasia, Europe and the USA showing that seven to 14 percent of

children under two are iron deficient. This is a serious condition which can have many adverse effects, including impaired learning - which may be permanent - impaired weight gain, gastrointestinal problems and impaired immune function.

Known risk factors included in the study were prematurity and low birth weight, increased body mass index, eating fruit only as a snack (rather than in combination with other foods, which helps with the absorption of iron) having no milk formula, drinking cow's milk every day, and having only home-made first solids.

"One of the worst combinations for deficiency of micronutrients early in life," Dr. Grant explains, "is when a baby of low birth weight gains weight very rapidly during the first two years of life."

He also clarifies the relationship between home-made first foods and iron deficiency. "Home-made foods are good, of course, as long as they are rich in nutrients – but the quality can vary greatly. The commercial products are regulated and consistent in the nutrients they supply."

The research showed the central role of the timing of eating fruit. While eating fruit only as a snack more than trebles the risk of iron deficiency, the risk rises more than three-fold again for a child who eats fruit only as a snack and drinks cows' milk every day.

Increased body size is also a greater risk factor when combined with others. Larger children who had never had milk formula had a 14-fold increase of iron deficiency compared with smaller children who had received some milk formula.

"The research has helped greatly by giving a quick check-list to assess whether the child's risk level is such that a blood test should be ordered," says Dr. Grant.

The first author on this paper, Dr. Deborah Brunt, completed this work as part of her Master of Health Science degree, which she undertook midway through her medical school training at The University of Auckland. Other researchers in the team were Dr Clare Wall from the Department of Nutrition at The University of Auckland, and Dr Peter Reed, biostatistician at the Starship Children's Hospital Research Centre .

Provided by University of Auckland

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